and it would not present an eyesore, as most lines at present do.

As I said before, the removal of Smithfield market to Islington, and the formation of a central terminus for the Great Western, Birmingham, London and York, and Eastern Counties railways on its site, should form a leading feature in the scheme, as also the abolition of the tolls on all the bridges, and the completion of the Thames Tunnel (which is at present like the Soane Museum, a "mere useless toy"), and which should be also thrown open to the public without toll, as it is always found that tolls are avoided if possible. There are many other minor points which I should like to allude to, but as I have already extended this to greater length than I intended, I will conclude, hoping that some of your able correspondents will take up this important subject, to which I have not been able to do justice; and that you will also assist the good cause by a few more of your powerful leading articles, and thus awaken your brethren of the press and the public generally, to a sense of the absolute necessity for some change in the present mode of managing these affairs.

Feb., 1847. A LONDONER.

STEAM POWER WITHOUT FUEL.

A PARAGRAPH in a recent number of THE BUILDER, on the alleged production of glowing red heat by friction of metallic plates, prepared as a machine for the purpose, has excited some interest. That a glowing red heat may be obtained by adequate friction of iron or copper plates properly adjusted, there cannot be the slightest doubt; and as in almost every really great and valuable practical discovery or invention, so in this, the wonder seems to be that machinery has never hitherto been expressly applied to an end not only practical and useful, but already frequently realized, by design as well as by accident, such as this has been.

If the savage Indian can cause a piece of dry cold wood to burst into flames by means of rapid friction alone; if the more civilized son of Vulcan can, with the power of his sturdy arm, and the weight of his rapid hammer, beat a piece of still colder iron into a glowing red hot taper, wherewithal to ignite his smithy furnace; if an iron axle will become red hot, and even be capable of setting fire to a carriage, by means of rapid friction; why should not the obvious possibility of thus evolving heat *ad libitum* by friction, and without fuel, be designedly and extensively applied, through proper machinery, to profitable purposes?

Might not the boilers of steam-engines, for instance, thus be heated, and the steam power generated, by means of *friction-engines and machinery worked by the power of the very steam thus generated*, and a perpetual circle of action thus be engendered, which would realize a much more intelligible and more practically useful form of perpetual motion than has ever hitherto appeared within the bounds of possibility, or at least of practical utility?

Let such an engine be once put in action till a glowing heat be accumulated, and, so long as a supply of water to the boiler is kept up, we do not see why the generation of the steam,—the motion of the friction-engine and machinery,—the friction itself,—and the accumulation of the glowing heat to sustain the steam and the power and the motion,—might not easily go on, and on, so long as the friction-plates and other mechanism are kept in working trim; and the only question then remaining for consideration is the adequacy of the power, thus once generated, to *do more* than merely sustain the friction requisite to keep up the necessary heat. At all events, for the mere domestic purposes of a kitchen or other range of grates, or rather of red-hot friction-plates, a miniature-engine, worked by steam from a copper, heated by the red-hot friction plates themselves, would, it may be thought, supply enough of surplus friction-heat for all the boiling, frying, broiling, and roasting, requisite in even the most extensive cooking establishment in existence; and that, too, without the disagreeable and damaging adjuncts of dust, smoke, sulphur, &c.; no less than without the perpetual expense and trouble and interruption attendant on the alternate supply and waste of fuel.

That friction-machinery on the great scale, however, as a complete substitute for fuel, might be adapted to all manner of steam-engines, whether locomotive or fixed, but with peculiar advantage to locomotive engines, including those of ocean and other steamers, seems possible; and what a vast new field for enterprize and profit, even in the midst of immense reductions of prices, right and left, would thus be opened up; independently altogether of the more immediate advantages attendant on so total a riddance of the clumsy and cumbrous accompaniments of coals and wood! No hindrance, *then*, to the growth of mills, machinery, manufactures, where neither coal-fields, forest-timber, peat-bog, nor water-power exist! No dragging of heavy coal cargoes or tenders along with trains or steamers—no waste of stowage—no drawbacks on extensive trading voyages, or even on voyages of discovery round the globe, or to the poles themselves, by steam! The idea is surely worth serious attention.

Then, too, most truly might steam be said to be *weaned from its infant provender, fuel;* and able, at length, to *walk, or rather to fly, alone;* untrammelled and free as the wind! And, in a more and more emphatically "iron age," we might be contented to derive both heat and comfort from that stern "cold iron," whose dread mission heretofore was much rather to deal forth the chilliness of death than to minister so immediately to the warmth of life.

ON THE EMPLOYMENT AND REMUNERATION OF CLERKS OF WORKS.

IN the employing and remunerating of clerks of works a fearful responsibility rests upon the employer.

In seeking to inculcate this truth, I address myself both to the employers and the employed, for if a responsibility rests upon the employer, it argues some importance in the employed, to establish which this paper is written; and if it should be the means of rescuing a clever and deserving, though under the present system oftentimes a besotted and dishonest, class of men from temptation and moral degradation, it will have answered the end desired.

In order to establish the responsibility of the architect in connection with the clerk of works, it will be necessary to enumerate the qualifications, duties, and responsibilities of the latter, for he has responsibilities as onerous as the former, and this it is which creates responsibility in the employer.

Qualifications.—A clerk of works is an artizan, a man of experience, a link connecting the operative with the architect; and as the term architecture is commonly understood, he is a kind of *between*, uniting the architecture of the one and practice of the other,—weighing with experience everything necessary, not only in the construction, but also in the arrangement of edifices. He must be a good accountant, because he has the management of the accounts, and oftentimes the buying of the materials. A measurer, for generally he has the measuring of the works at the conclusion, checking the accounts, and paying the smaller bills.

Duties.—His primary duty is the superintendence of the works, to see the drawings are fully carried out in all their dimensions, construction, and details,—that the specification is fully obeyed in all particulars, to prevent the admission of unsound, defective, or improper materials,—that things are of their proper sizes, weights, and qualities. For all these purposes it is absolutely necessary that he should be the first man on the works in the morning, and the last man off at night, and not to leave the building when in his judgment injustice may be done to his employer in his absence.

It is his duty, also, in case of his discovery of any defective construction, to report the same to his employer; for however carefully a set of drawings may be studied, there are generally some points arising in the course of execution that seem not to have been studied at all; in such cases, an instant report to his employer is required.

In measuring up, it is his duty to be strictly honest to his employer, however much his feelings may be in favour of the builder; and in paying bills, the pernicious practice of deducting commission should be especially avoided by the honest clerk of works. To sum up, his duty is honesty, integrity, and uprightness, both to his employer and the tradesman, favouring neither one nor the other; and as such he is in a place of great trust.

Responsibilities.—From the foregoing digest of his duties, it will be seen that the responsibilities of the clerk of works are of no ordinary character. His duty to himself, his employers, and, above all, to his Maker, renders it imperative upon him to be honest, to resist the temptations sometimes held out by the builder or his agents, to maintain his independence of mind, to be strictly just, and fear no man.

What is too often the position of the clerk of works now? I am sorry to say that too often the clerk of works is a debased and drunken mechanic, truckling to the builder, shutting his eyes for a consideration to all the dishonesty and injustice practised towards his employer, in allowing unsound and improper materials to be used, and weights, measures, and qualities under the specified value, and in many things in a clerk of works' responsible care, selling himself to a dishonest and cupidical builder.

What is the effect? His self-esteem is degraded, his vices are encouraged, his character destroyed. How can it be expected of such a man that he will perform his duty. Bear all this in mind, ye architects and employers, while I tell you the cause of it, and that you are responsible for that man's state.

I have shewn the responsibility of the clerk of works, his temptation, and too often dangerous fall from duty; and I will now prove that architects and employers are the causes of their clerk of works' dereliction of duty.

Architects have yet to learn the fact, that in all situations of trust, the holder should be well and handsomely salaried. Ask the bankers, merchants, railway contractors, and even builders: they will all answer, that where they place confidence and trust they give an adequate salary; it is not only necessary, but it is imperative. Look at your clerks of works, holding situations of great trust, temptation, and responsibility, what do you give them? Not sufficient to keep themselves and families in respectability, much less from peccability.

Some architects (standing high in the profession too) grind their clerk of works' salary down to the wages of a building mechanic; I have shewn the result in the degradation and abasement of the clerk of works, and I think it requires very little foresight to see that in the end nothing is saved, but a vast deal is lost, not only in the moral but in the monetary point of view. And now let me ask why should such a state of things exist? I call upon architects to do their duty to their clerks of works, to improve their moral condition, but first to improve their salaries; and the natural consequence will be that they will be above want, and consequently more above temptation. The fact is, that architects treat them as common mechanics, pay them as common mechanics, and expect them to be immaculate and honest all the while. Where want oppresses, and temptation offers, it is not in the power of poor human nature to resist. J. L. C.

CARVING BY MACHINERY.—At a meeting of the Society of Arts, on 24th ultimo, Mr. Jordan read a paper "On the New Carving Machinery," erected for the Houses of Parliament, and also employed at the works of Messrs. Taylor, Williams, and Jordan, Belvidere-road, as described by us some time ago, when it was first brought into operation. The author explained to the meeting the mechanism which forms the two floating tables, and which by a universal motion allows the vertical tracer and cutter to perform their work. A perfect pattern of the work to be carved is first modelled by the artist, and afterwards copied by the machine in wood with perfect accuracy, and in such a manner that two or three copies are made simultaneously. The carving thus prepared by the machine is then sent back to the artist, who introduces by hand the finishing touches, and thus the works have the merits of artistic productions at comparatively small cost. The decorations of the House of Lords are the most extensive works yet done by this machine; but groups of flowers and ribbon work, and sculpturing in the round, were exhibited, and covered the walls of the room.

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